



Indiana Department of Education
SUPPORTING STUDENT SUCCESS

Indiana Department of Education – Division of College & Career Preparation
Indiana Career and Technical Education Course Description and Standards

Information Guide
for
Career and Technical Education Course Assessment Tools
Nutrition and Wellness

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Information Guide
for
Indiana Career and Technical Education Course Assessment Tools
Nutrition and Wellness

During June and July 2012, the team of teachers listed on the cover page developed three standards-based assessment tools for the Indiana high school course, *Nutrition and Wellness* course: (1) **Test Blueprint**, (2) **Content Outline**, and (3) **Bank of Multiple Choice Test Items**. In preparation for their work, team members completed an online tutorial that provided an overview of assessment fundamentals and principles of standards-based assessment, plus guidelines for developing the three assessment tools. The team met in person once, in a day-long work session. The balance of their work was done online through weekly web-conferencing sessions, sharing of information and documents on an online team Worksite, and e-mail communications. The draft materials the team developed were posted on an online review site where other teachers examined them and provided feedback. Team members and project staff used the reviewers' input to revise, finalize, and validate the assessment tools.

In this project, the work was standards-based. The Domains and Standards in the current Indiana Course Framework were the starting-point and continuous foundation for the work. In contrast to standards-referenced efforts that begin with existing materials and then locate matching standards, the team's deliberations started first with the standards, and the assessment tools were developed from there.

The **Test Blueprint** is presented on page 4 of this document. The Blueprint shows the standards-based weighting and item distribution recommended by the team for a statewide course assessment. It is important to distinguish between a test blueprint and the overall course curriculum. The Test Blueprint shows the recommended weighting of a 65-item multiple choice test. This may or may not be the same as the weighting of the course curriculum. Other types of assessment may be more suitable for some of the domains and standards included in the Course Framework. Therefore, a domain that is given less weight in the Test Blueprint could be given more emphasis in the overall course, and student achievement would be locally evaluated using other types of assessment tools.

The **Content Outline** also is provided on the pages that follow. It identifies and describes essential topics related to the course standards. The Content Outline is the team's consensus on the essential topics that should be consistently addressed statewide in the course, and which would be expected to be represented in the statewide assessment. The additional details given in the Content Outline provide a framework for local course design, curriculum, and instruction. The Content Outline also will enhance teacher collaboration and consistency of the course across the state. It is important to note that a content outline is not all-inclusive of the topics addressed in the Course Framework nor in a local course, where additional topics may be included.

The Test Blueprint and Content Outline provided the basis for the third assessment tool the team developed, the **Bank of Multiple Choice Test Items**. The items in this bank are based on the essential topics listed in the Content Outline. Items are distributed across these topics, at three levels of cognitive complexity as further explained on the next page. The four-option multiple choice test items each have one correct answer. A large number of items are included in the bank, enabling each online test to be a unique combination of items chosen from the item bank through stratified random selection, based on the weighting indicated in the Test Blueprint. For test security purposes, the bank of test items is controlled by the Indiana Department of Education. An online pretest/posttest course assessment for this course will be provided by the DOE for schools/teachers to use on a voluntary basis beginning in the spring semester of 2013.

Test Items and Levels of Cognitive Complexity

The test items included in the test bank were examined and classified in two ways. First, the items were to focus on an essential topic from the Content Outline. Secondly, the items were to represent varying levels of cognitive complexity, or types of thinking required. The Cognitive Complexity Three Level Framework (Fox & Laing-Kean, 2012) was used to classify the test items based on the three levels shown in the center column of the chart below. This Framework draws on classifications by AAFCS (2010), Fox (2001), and Haladyna (2004). Overall, test items classified as Level 1 focus on recall and understanding of an individual fact or concept. Level 2 items involve combined knowledge of at least two familiar facts or concepts to complete an analysis and reach a conclusion. Level 3 questions require understanding and applying relationships among three or more components and typically involve selecting and/or providing relevant information in order to predict, calculate, or make a judgment.

<i>Revised Bloom's Taxonomy</i> Anderson & Krathwohl	<i>Cognitive Complexity Three Level Framework</i>	<i>Depth of Knowledge</i> Indiana RISE
Remember	Level 1 – Facts, Concepts Known truth or experience. Involves knowledge of individual facts and abilities to identify familiar examples or non-examples.	Level 1 – Recall
Understand		Level 2 – Skill/Concept
Apply	Level 2 – Procedures Series of events that lead to a result. Involves remembering and understanding at least two types of information to reach a conclusion.	
Analyze		Level 3 – Strategic Thinking
Evaluate	Level 3 – Principles Relationships among rules, theories, methods, concepts, or probabilities. Involves multiple facts, concepts, and procedures to predict events.	
Create		Level 4 – Extended Thinking

W.S. Fox & C.A.M. Laing-Kean, Teach Sharp LLC, 2012

The above chart illustrates the relationships among the Cognitive Complexity Three Level Framework used in this project with the six categories of the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2001) and the four categories of the Depth of Knowledge (DOK) framework used in the Indiana RISE system. As the chart shows, the other two systems are fully accounted for in the Three Level Framework. In particular, it is important to note that Level 1 in the Three Level Framework is more extensive than the DOK Level 1, including much of DOK Level 2. Level 2 of the Three Level Framework includes most of DOK Level 3, and Level 3 of the Three Level Framework is primarily comprised of DOK Level 4. Based on this comparison, the following equivalent notations could be used:

Level 1 = DOK 1+2

Level 2 = DOK 2+3

Level 3 = DOK 3+4

References

- American Association of Family and Consumer Sciences (AAFCS). (2010). *Information Bulletin for Pre-Professional Assessment and Certification (Pre-PAC) in Nutrition, Food, and Wellness*, pages 5-6. Retrieved from <http://www.aafcs.org/res/Credentialing/prepac/Bulletins/Nutrition%20Food%20Wellness%20Information%20Bulletin.pdf>
- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.
- Fox, W. S. (2001). *Three-level framework for teaching and learning*. West Lafayette, IN: Department of Curriculum & Instruction, Purdue University.
- Haladyna, T. M. (2004). *Developing and validating multiple-choice test items* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Indiana Department of Education (n.d.). *RISE Evaluation and Development System: Student Learning Objectives Handbook*, page 36. Retrieved from <http://www.riseindiana.org/sites/default/files/files/Student%20Learning/Student%20Learning%20Objectives%20Handbook%201%200%20FINAL.pdf>

Test Blueprint for <i>Nutrition and Wellness</i>					
Domain	Weighting	Number of Test Items			
		Cognitive Levels ¹			Totals
		L1	L2	L3	
1. Personal, Academic, and Career Success	Assessed along with other domains and with other assessment tools.				
2. Nutrition Principles and Applications	40%	10	8	8	26
3. Influences on Nutrition and Wellness	15%	4	3	3	10
4. Food Preparation, Safety, and Handling	37%	9	7	8	24
5. Science, Technology and Careers in Nutrition and Wellness	8%	3	2	0	5
Totals	100%	26	20	19	65

¹Proportional representation of cognitive levels within in each Domain is based on the Cognitive Complexity Three Level Framework (Fox & Laing Kean, 2012), which is correlated with the Indiana RISE Depth of Knowledge (DOK) framework.

Level 1 - 40%	Level 2 - 30%	Level 3 – 30%
Level 1 = DOK 1+2	Level 2 = DOK 2+3	Level 3 = DOK 3+4

Content Outline

A Content Outline is based on the Indiana Course Framework for a specific course. Each Content Outline was developed by a team of Indiana educators and represents their consensus on the essential topics that should be consistently addressed statewide in the specific course, and which would be expected to be represented in the statewide Assessment. A content outline is not all-inclusive of the topics addressed in the Course Framework or in a local course. Important/Additional topics may be included in a course as time permits, to address student and community interests and needs

The essential topics in the *Nutrition and Wellness* Content Outline represent knowledge and skills pre-requisite for the *Advanced Nutrition and Wellness* course. Along with the essential topics, the *Nutrition and Wellness* Content Outline includes additional topics designated as “important.” The team opted to include these important topics because of their value as a foundation for career pathways and to promote content included in the American Association of Family and Consumer Sciences (AAFCS) Pre-professional Assessment and Certification (Pre-PAC) exam (further explained below). The team recognized that it would not be possible to thoroughly address all of these additional important topics in a one-semester course, and therefore not appropriate to include them on a statewide exam. However, they chose to specifically list them in order to emphasize the value of introducing them to all students and as potential topics for further study by individual students.

The AAFCS Pre-PAC Program provides standards-based assessments and industry-recognized certifications for high school and post-secondary students. The Content Outline for the AAFCS Pre-PAC for “Nutrition, Food, and Wellness” has been cross-walked with the Content Outline for a sequence of three Indiana courses. These cross-walks indicated that with carefully designed curriculum and instruction, the Pre-PAC competencies for “Nutrition, Food and Wellness” could be adequately addressed through two of the Indiana high school courses: *Nutrition and Wellness* and *Advanced Nutrition and Wellness*. The cross-walk showed that the third course, *Introduction to Culinary Arts and Hospitality*, would be beneficial to more thoroughly prepare students for this national certification. In the Content Outline for *Nutrition and Wellness* that follows, Pre-PAC crosswalk notations (e.g. Pre-PAC 2.A.1) are inserted throughout. These notations indicate the corresponding section of the AAFCS Pre-PAC Content Outline for “Nutrition, Food, and Wellness” where these same topics are found.

Reference

American Association of Family and Consumer Sciences (AAFCS). (2010). *Information Bulletin for Pre-Professional Assessment and Certification (Pre-PAC) in Nutrition, Food, and Wellness*, pages 5-6. Retrieved from <http://www.aafcs.org/res/Credentialing/prepac/Bulletins/Nutrition%20Food%20Wellness%20Information%20Bulletin.pdf>

Content Outline for *Nutrition and Wellness*

Domain 1 – Personal, Academic, and Career Success	Assessed along with other domains and with other assessment tools.
Core Standard 1: Integrate processes of thinking, communication, leadership, and management in order to apply knowledge and skills for nutrition, food, and wellness.	

Standards

NW-1.1	Demonstrate components of critical thinking, creative thinking, and reasoning
NW-1.2	Evaluate effective communication processes in school, family, career, and community settings
NW-1.3	Demonstrate leadership that encourages participation and respect for the ideas, perspectives, and contributions of group members
NW-1.4	Apply management, decision-making, and problem solving processes to accomplish tasks and fulfill responsibilities
NW-1.5	Examine the interrelationships among thinking, communication, leadership, and management processes to address family, community, and workplace issues
NW-1.6	Demonstrate fundamentals to career success (e.g. strong work ethic, goal setting, time-management, positive attitude, adaptability/flexibility, stress resilience, accountability, self-discipline, resourcefulness, cooperation, self-assessment)
NW-1.7	Demonstrate etiquette skills for business and social situations
NW-1.8	Apply knowledge gained through research to solve problems and communicate ideas in the fields of food, fitness, nutrition, and wellness

Content Outline – *Nutrition and Wellness* (July 2012)

Domain 2 – Nutrition Principles and Applications	Weighting 40%	Number of Test Items 26
Core Standard 2: Apply nutrition principles to health and wellness choices across the life span.		

Standards

NW-2.1 Analyze food and nutrition information, including USDA Dietary guidelines and MY Plate, to meet nutrition and wellness goals across the lifespan

Essential Topics

1. *Dietary Guidelines for Americans* (Pre-PAC 2.A.1)
2. *Recommendation Dietary Allowance* (Pre-PAC 2.A.2)
3. *MyPlate* (Pre-PAC 2.A.3)
4. *Portion Size* (Pre-PAC 2.A.6)
5. *Nutritive value of foods* (Pre-PAC 2.A.5)
6. *Recommendations for 2,400 calorie diet (based on recommendations for active teens)* (Pre-PAC 2.A.7)

NW-2.2 Demonstrate proper portion sizes from each of the food groups to meet nutrition and wellness needs of individuals across the lifespan

Essential Topics

1. *Portion size* (Pre-PAC 2.A.6)
2. *Food sources of food groups* (Pre-PAC 2.A.4)

NW-2.3 Describe the six classes/groups of nutrients, explain their functions to meet health and nutrition requirements of individuals and families, and classify food sources

Essential Topics

1. *Describe Vitamins and their functions* (Pre-PAC 5.A)
2. *Food sources of vitamins* (Pre-PAC 5.A.4)
3. *Describe minerals and their functions* (Pre-PAC 5.B)
4. *Food sources of minerals* (Pre-PAC 5.B.6)
5. *Describe proteins and their functions* (Pre-PAC 5.C)
6. *Food sources of proteins* (Pre-PAC 5.C.7)
7. *Describe Fats and their functions* (Pre-PAC 5.D)
8. *Food sources of fats* (Pre-PAC 5.D.5)
9. *Describe Carbohydrates and their functions* (Pre-PAC 5.E)
10. *Food sources of carbohydrates* (Pre-PAC 5.E.5)

Content Outline – *Nutrition and Wellness* (July 2012)

11. *Content and function of water in the body* (Pre-PAC 5.E)
12. *Recommended consumption amounts of water* (Pre-PAC 5.F.4)
13. *Fat-soluble and water-soluble vitamins* (Pre-PAC 5.A.2) *and forms of vitamins A, B and D* (Pre-PAC 5.A.2)
14. *Vitamins and minerals associated with building strong bones* (Pre-PAC 5.A.5)
15. *Iron* (Pre-PAC 5.B.2) *and minerals* (Pre-PAC 5.B.1) *common in most foods*

Important Topics:

16. *Relation of sodium to high blood pressure* (Pre-PAC 5.B.3)
17. *Metabolism of excess proteins* (Pre-PAC 5.C.5) *and meeting protein needs through a vegetarian eating plan* (Pre-PAC 5.C.1)
18. *Essential amino acids (complementary proteins)* (Pre-PAC 5.C.3)
19. *Calories per gram of protein* (Pre-PAC 5.C.8), *Calories per gram of fat* (Pre-PAC 5.D.6), *Calories per gram of carbohydrates* (Pre-PAC 5.E.6)
20. *LDL-cholesterol and HDL-cholesterol* (Pre-PAC 5.D.1)
21. *Fats (saturated, unsaturated, polyunsaturated)* (Pre-PAC 5.D.2)
22. *Fatty acids (omega-3, essential fatty acids, trans fatty acids, sources of fatty acids)* (Pre-PAC 5.D.3)
23. *Monosaccharide and disaccharide* (Pre-PAC 5.E.1)
24. *Fiber (dietary fiber, soluble fiber, insoluble fiber)* (Pre-PAC 5.E.2)
25. *Sugars (glucose, dextrose, lactose, sucrose, fructose, glycogen)* (Pre-PAC 5.E.4)

NW-2.4**Compare food label information to make health and wellness choices***Essential topics*

1. *Nutrition facts panel (information located on label, order of ingredients, etc.)* (Pre-PAC 2.D.2).
Also addressed in NW-3.5

NW-2.5**Analyze and assess wellness goals across the lifespan, particularly for teenagers (e.g., food fads and fallacies, extreme procedures for weight management, sports supplements, nutritional supplements)***Essential topics*

1. *Emotional* (Pre-PAC 1.A.1) *and Psychological* (Pre-PAC 1.A.2) *influences on food choices (focus on teens)*
2. *Components of wellness* (Pre-PAC 1.A.6) *and fundamentals* (Pre-PAC 1.A.7) *of good nutrition across the lifespan (includes healthy eating habits (Pre-PAC 1.D.1))*
3. *Setting health and wellness goals*
4. *Sports and nutrition supplements*

Content Outline – *Nutrition and Wellness* (July 2012)

5. *Healthy strategies to lose weight* (Pre-PAC 1.D.2) *and healthy strategies for weight management (maintaining or gaining)* (Pre-PAC 1.D.3)

Important topics

6. *Traits, examples, and health risks of fad diets* (Pre-PAC 1.D.4)
7. *Types and symptoms of eating disorders* (Pre-PAC 1.D.5)

Domain 3 - Influences on Nutrition and Wellness	Weighting 15%	Number of Test Items 10
Core Standard 3: Analyze factors that influence nutrition and wellness practices.		

Standards

NW-3.1 **Assess physical, emotional, social, intellectual, cultural, and ethnic components of individual and family wellness**

Essential topics

1. *Emotional* (Pre-PAC 1.A.1) *and Psychological* (Pre-PAC 1.A.2) *on food choices (focus on family)*
2. *Stress and how it affects the body*

NW-3.2 **Explain how geographical location and climate location affects food selection and availability**

Essential topics

1. *Environmental influences on food choices* (Pre-PAC 1.B.2)
2. *Globalization of food* (Pre-PAC 1.B.3) – *locally grown foods* (Pre-PAC 2.C.2)
3. *Sustainable living practices* (Pre-PAC 1.B.8)

NW-3.3 **Examine how economic factors affect food selection and availability**

Essential topics

1. *Economic influences on food choices* (Pre-PAC 1.B.1)

NW-3.4 **Identify legislation and regulations related to food, nutrition, and wellness issues**

Essential topics

1. *Food Safety and Inspection Service (FSIS)* (Pre-PAC 1.C.1)
2. *United States Department of Agriculture (USDA)* (Pre-PAC 1.C.2)
3. *Food and Drug Administration (FDA)* (Pre-PAC 1.C.3)
4. *Legal and legislative issues associated with wellness (health claims on food labels, consumer rights, allowable amounts of fats in foods, Delaney Clause, etc.)* (Pre-PAC 1.C.5)

Content Outline – *Nutrition and Wellness* (July 2012)**NW-3.5 Evaluate the nutritive value and costs of snacks, fast foods, and balanced meals***Essential topics*

1. *Nutrition Facts Panel* (Pre-PAC 2.D.2)
Note: Also addressed in NW-2.4
2. *Reliable sources of nutrition information* (Pre-PAC 2.D.4)
3. *Economic influences on food choices* (Pre-PAC 1.B.1)
 - *Calculate and compare costs of food items in relation to nutritive value (nutrient density)*
4. *Developing a healthy approach to food and nutrition* (Pre-PAC 2.C.1)

Domain 4 – Food Preparation, Safety, and Handling	Weighting 37%	Number of Test Items 24
Core Standard 4: Demonstrate abilities to prepare and serve safe, nutritious foods.		

Standards**NW-4.1****Define and explain food borne illness and demonstrate how to prevent them by applying the concepts of “clean, separate, cook, and chill”***Essential topics*

1. *Safe food storage practices* (Pre-PAC 3.A.1)
2. *Safe food handling practices* (Pre-PAC 3.A.2)
3. *Challenges to preventing foodborne illness* (Pre-PAC 3.A.3)
4. *Sanitation practices (hand washing, fight BAC guidelines, etc.)* (Pre-PAC 3.B.1)
5. *Food safety temperatures (danger zone, sterilization temperatures, correct doneness temperatures for meat, etc.)* (Pre-PAC 3.B.2)
6. *Cross-Contamination* (Pre-PAC 3.B.5)
7. *Potentially hazardous foods* (Pre-PAC 3.C.3)
8. *Foodborne illnesses* (Pre-PAC 3.C.4) *(major symptoms and typical food sources)*
 - Clostridium botulism (botulism)
 - Clostridium perfringens
 - Escherichia coli
 - Listeria monocytogenes
 - Staphylococcus aureus
 - Salmonella
 - Hepatitis
 - Trichinosis

Content Outline – *Nutrition and Wellness* (July 2012)

NW-4.2 Demonstrate basic abilities to safely use and maintain equipment within a kitchen setting, including large and small appliances, small kitchen tools, measuring tools, and knives

Essential topics

1. *Equivalents and measuring techniques* (Pre-PAC 2.C.4)
2. *Safe use of equipment* (Pre-PAC 3.B.4)
3. *Knife safety*

Important topics

4. *Small kitchen tools (cookware, bakeware, measuring, cutting, mixing, etc.)*
5. *Small appliances (blender, food processor, toaster, electric mixer, etc.)*
6. *Large appliances (range, microwave oven, dishwasher, refrigerator, etc.)*

NW-4.3 Demonstrate abilities to prepare nutritious foods using a variety of basic methods and techniques

Essential topics

1. *Apply a healthy approach to food and nutrition* (Pre-PAC 2.C.1)
2. *Equivalents and measuring techniques* (Pre-PAC 2.C.4)
3. *Read recipe and apply appropriate skills based on recipe preparation*
4. *Food preparation terms including moist and dry heat methods of cookery*
5. *Selection, storage, and preparation techniques for meats and meat products* (Pre-PAC 2.C.5)
6. *Selection, storage, and preparation techniques for dairy products* (Pre-PAC 2.C.6)
7. *Selection, storage, and preparation techniques for grain and starches* (Pre-PAC 2.C.7)
8. *Selection, storage, and preparation techniques for fruits* (Pre-PAC 2.C.8)
9. *Selection, storage, and preparation techniques for vegetables* (Pre-PAC 2.C.9)
10. *Microwave cookery* (Pre-PAC 4.B.5)

NW-4.4 Apply basic principles of resource management when planning, preparing, and serving nutritious food, including food costs and availability, work plans and timetables, efficient work methods, and collaboration with others

Essential topics

1. *Food budgets and calculating food costs*
2. *Preparing work plans and timetables*
3. *Efficient work methods*

Important topics

4. *Economic influences on food choices* (Pre-PAC 1.B.1)

Content Outline – *Nutrition and Wellness* (July 2012)

5. *Role of resources* (Pre-PAC 1.B.5)
6. *Basic resource management principles*

NW-4.5 Demonstrate abilities to increase and decrease recipe measurements based on desired yield*Essential topics*

1. *Equivalents and measuring techniques* (Pre-PAC 2.C.4)
2. *Changing yield: divide, multiply, convert and adjust*

Domain 5 – Science, Technology and Careers in Nutrition and Wellness	Weighting 8%	Number of Test Items 5
Core Standard 5: Analyze impacts of science, technology, and careers on nutrition and wellness.		

Standards**NW-5.1 Discuss current technology and techniques used to develop, produce, process, and store foods and their impacts on food safety, nutrition, and wellness (e.g., organic, holistic, genetics, hormones)***Essential topics*

1. *Organically grown foods* (Pre-PAC 4.C.1)
2. *Role of technology in expanding the food supply (genetically engineered food, irradiation)* (Pre-PAC 4.A.5)

NW-5.2 Explore technological tools and advancements used to track nutrition and wellness goals and progress*Essential topics*

1. *Applications (Apps)*
2. *Software and websites*

NW-5.3 Examine developments and trends in food marketing, and their impacts on family and consumer choices*Essential topics*

1. *Food advertising, mass media and food*

NW-5.4 Discuss trends, employment opportunities, and preparation requirements for careers related to nutrition, food, and wellness*Essential topics*

1. *Specific career titles associated with nutrition and food occupations (dietician, executive chef, researcher, food stylist, food service manager, counselor,*

Content Outline – *Nutrition and Wellness* (July 2012)

- restaurateur, etc.)* (Pre-PAC 6.A.1)
2. *Functions of careers associated with nutrition and food* (Pre-PAC 6.A.2) *and roles and responsibilities of careers associated with nutrition and food* (Pre-PAC 6.A.3)
 3. *Personal priorities, aptitudes, and preferences associated with nutrition and wellness related careers* (Pre-PAC 6.B.1) *and work schedules for jobs in foodservice, teaching and counseling* (Pre-PAC 6.D.3)
 4. *Education, training, and licensure requirements for nutrition and food careers* (Pre-PAC 6.B.4)
 5. *Job market opportunities locally, regionally and nationally* (Pre-PAC 6.C)
 6. *Role of standards, resources, and opportunities in career decision-making* (Pre-PAC 6.D.2)